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By-Scott, Myrtle

Some Parameters of Teacher Effectiveness as Assessed by an Ecological Approach.

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To identify parameters of teacher effectiveness, this study uses an ecological approach. Since setting, which includes not only physical surroundings but also the dynamic of activity, has a coercive effect on behavior, a teacher's ability to establish appropriate settings should be an accurate measure of effectiveness. Five head teachers in a project for disadvantaged 5-year-olds who were rated by supervisors at either extreme of effectiveness were selected for observation of their behavior. Complex, in-depth observations, based on behavioral episodes, were made of each teacher in the settings of "Morning Greeting" and "Large Group Activity." These observations were analyzed on a structural and quantitative basis involving 16 factors governing a behavioral episode. While the nature of the resulting data made statistical analysis inappropriate, several major trends were recorded. Those teachers rated effective maintained a smoother continuity to their activities, ended more episodes with the attainment of goals, and showed more positive and less negative emotions than their poorly rated counterparts. The effective teachers were more directly involved, more spontaneous, and more in control of situations. (MH)

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SOME PARAMETERS OF TEACHER EFFECTIVENESS AS ASSESSED BY AN ECOLOGICAL APPROACH

Myrtle Scott

George Peabody College for Teachers

Introduction

Teacher effectiveness and methods of evaluating teachers have received central focus in psychology and education throughout the history of education. The literature of both professions is replete with references which reflect the great concern regarding this area. The basic concept of teacher effectiveness, however, rather than becoming more concise and clearly delineated, seems to have become increasingly more abstruse and confused. The meaning of the term itself is enmeshed in a tangle of verbosity and the concept seems to have been particularly elusive to objective methods of investigation. Reviews of the literature

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can be found elsewhere (Scott, 1968; Kleinman, 1966; Yamamoto, 1964; Ryans, 1963; Morsch and Wilder, 1952; Domas, et al., 1950).

The study of teacher effectiveness has presented both a predictor and a criterion problem. Mitzel (1964) has suggested that teacher effectiveness as a single term is inappropriate and might more properly be viewed as a multi-variate factor including (a) product criteria, (b) process criteria and (c) presage criteria. Research has frequently been directed toward such presage criteria as personality variables and various individual differences of the teachers themselves (Dugan, 1961; Medley, 1959; Sorenson, 1963; Soloman, 1964; Bible, 1963; Brownell, 1961; Ort, 1964; Beery, 1962; Hall, 1964; Dandes, 1966; Sprinthall, et al., 1966; Meisgeier, 1965; Garman, 1966; Morman, 1965). These studies have been largely unproductive and may represent a "cart before the horse" approach in attempting to spell out the relevant variables in the teachers before the basic definition of effectiveness has even been obtained. A very substantial and much more promising body of research literature has begun to accrue regarding process criteria which include studies of such things as teacher-pupil interaction, classroom climate, etc. These investigations have been more behavioral in nature and the considerable progress achieved here is most notable in the words of Medley and Mitzel (1958) Medley (1967), Flanders (1959), Soar (1967), and others.
Studies of product criteria have been somewhat less obvious in the literature and have only recently come in for their share of research attention (Shim, 1965; McNeil, 1967). Variables studied here refer to changes taking place in the pupils and would include such things as school achievement.

Another very interesting and exciting new tack has been the application of ecological research methodology to the study of teacher effectiveness. Recent ecological research has dramatically demonstrated the coercive force of behavior settings in determining and controlling human behavior (Gump, 1964).

Behavior settings are portions of the psychological habitat of the individual. They are, as defined by Barker and Wright (1954), not simply neutral scenes of action but include the action as part of themselves. A behavior setting is defined to include two components: (a) a stable part of the physical and social milieu of a community and (b) an attached standing pattern of human behavior.

Each behavior setting has its own relatively standard set of place, time, and object props. It occurs at relatively the same time and place each time it occurs and the physical surround in that place is more or less the same. Each behavior setting also contains a certain behavior pattern which dictates what may be done in that setting--the rules, if you will, for behavior which may occur in that setting. The time, place, and object props together with the standing behavior patterns act together in such a way as to coerce people's behavior while in this setting.

When behavior settings have been clearly identified they are given names which are frequently the commonly accepted label for the activity which is occurring. Examples might be Behavior Setting: Church Services, or Behavior Setting: Basketball Game. As an individual enters Behavior Setting: Church Services he sees the same physical surround each time--the pews, altar, etc. The social milieu is also relatively

stable. Certain roles exist and are filled in relatively the same way each time such as the minister and choir. In addition, the rules governing behavior remain the same each time and these are recognized by persons who take part in this setting. The organist plays soft music and the entire situation, or behavior setting, coerces certain behaviors from the people who enter it.

In contrast, when a person enters Behavior Setting: Basketball Game he also sees a certain physical surround which is very different from that in Behavior Setting: Church Services but which is stable within itself. In the same way the social milieu and the attached standing patterns of behavior in Behavior Setting: Basketball Game are also different from those in Behavior Setting: Church Services but stable within Behavior Setting: Basketball Game. Again, the behavior of the individuals who enter this setting <u>is coerced by the setting</u>.

Using the behavior setting approach and an ecological methodology, Gump's studies of teacher effectiveness, as well as those of Kounin (1962), have stressed the importance of the teacher's skills in developing an environment for learning and in behavior setting management. The ecological studies have seemed quite promising in that they represent a sort of "back to the drawing board" attempt to identify some of the fundamental parameters which contribute to teacher effectiveness.

Following this line of inquiry, then, an ecological approach was chosen for the present study. Specific questions being asked were: (<u>a</u>) Can ecological methods be used to reliably identify parameters of teacher effectiveness? (<u>b</u>) If so, what are these parameters?

Method

Subjects. Subjects were five head teachers in classrooms of projects for culturally disadvantaged five year old children. Teachers were selected for this study who fell at both extremes of an effectiveness continuum as judged by supervisors. This was done in order to assure a dichotomous sample and in attempt to maximize any differences which might appear. Hereafter, whenever the teachers of the sample are referred to as "effective" or "ineffective" it will always refer to effectiveness as rated by supervisors. The sample included both Negro and white men and women.

Each teacher had chief responsibility for approximately 20 children and had aides or assistant teachers working in the classroom. Both Negro and white boys and girls attended all classes except one where all the children were Negro.

Procedure. Detailed in-depth ecological observations were taken on each teacher in the form of the specimen record described by Barker and Wright (1954). The observations were taken with the aid of Stenomasks attached to transistorized portable tape recorders; the procedure used was that described by Schoggen (1964b). Observers were both men and women, some of whom had had previous teaching experience and some of whom had not. Their observation schedule with individual teachers was counterbalanced. Two records were taken on all teachers except two, one of whom had three observations taken and the other, one.

In order to generate comparable data on all teachers, all observations were done during the same behavior settings. The settings which were chosen for observation were: (a) Behavior Setting: Morning Greeting (the time when the children arrive and are greeted by the teacher)

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and (b) Behavior Setting: Large Group Activity (the time when the head teacher works with the whole group). Large Group Activity was chosen as representive of a group instructional activity in a pre-school. Morning Greeting was chosen because it is thought by many educators to be a crucial time when the teacher sets the patterns for the day. In this relatively less structured situation, when the coercion by the behavior setting itself is reduced, any differences which occur as a function of varying effectiveness might be expected to appear. Examples of the types of records which were obtained are given in the Appendix.

Analysis. When the records were in final typescript form, they were unitized. The basic unit of analysis used in the present study was the behavior episode (Wright, 1967).

Behavior episodes are defined as the fundamental molar units of the behavioral stream of the individual. They are naturally occurring, logically partitionable units of human behavior which (a) have a beginning and an end point and which (b) proceed in the same psychological direction throughout. Behavior episodes are the readily observed and easily agreed upon units into which behavior falls when viewed either by the actor himself or by another person. Examples of behavior episodes might be seen in a teenager's behavior as: (a) talking on the telephone, (b) eating an apple, (c) writing something down, (d) getting mail from a box.

Behavior episodes may occur either singly or in conjunction with other episodes. Younger children characteristically behave in frequent, short discrete episodes (Figure A) whereas episodes occurring in a more complex pattern (Figure B) are more characteristic of older children.

Figure A

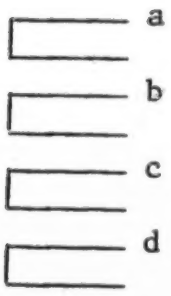
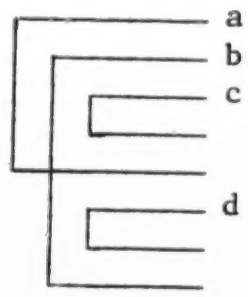


Figure B



Each record was marked independently by three trained episoders. All episode markings were then compared and, where differences existed, reconciled into a "frozen copy." This frozen copy was then used as the basis for all subsequent judgments which were made. Samples of episode markings are given in the Appendix.

In attempt to quantify the behavior of the teachers, each episode was judged according to a 16-variable category system and assigned a rating. The system included both structural and qualitative categories which were adapted from Barker and Wright's (1954) and Schoggen's (1964a) work with children. The following categories were rated by two independent judges:

Structural Categories

1. Length of Episode--Length was judged to the nearest minute unless the episode lasted less than one minute, in which case it was judged as nearest to either 15 seconds, 30 seconds, or one minute.

2. Total Number of Overlapping Episodes--A simple count was taken of the number of episodes which overlapped with the target episode throughout its course.

3. Maximum Number of Overlapping Episodes--Here a simple count was made of the maximum number of episodes overlapping with the target one at any single given point during its course.

4. Type of Overlap--An episode was judged as to whether it was enclosing, enclosed, interlinking, interpolated, coinciding, or isolated.

5. Form of Transition--An episode was judged as abrupt in transition if it ended while no other continued, whereas it was judged as merging if it ended while another overlapping episode was still in progress.

6. Continuity--An episode was judged as continuous if it proceeded continuously from beginning to end without a break while it was judged as discontinuous if an interruption occurred.

7. Basis of Discrimination--Contained episodes were judged on the basis of potency while all other episodes were judged on the basis of direction.

8. Relative Weight--An episode was judged as either being of primary, secondary, or tertiary weight, or some combination of these at various points during its course, relative to other episodes with which it overlapped.

9. Episode Issue--This was a judgment of whether or not the goal was reached during the episode and, if so or if not, how.

10. Number of Interruptions--This was a simple count of the number of breaks in an interrupted or discontinuous episode.

Qualitative Categories

11. Specificity--This category referred to the number of children with whom the teacher was dealing in the episode and included subcategories of one child, two children, small informal group or a larger formal group.

12. Spontaneity--This category referred to the person or agent who initiated and terminated each episode and was judged as to whether it

was spontaneously initiated and/or terminated by the teacher, or whether the initiation and/or termination was instigated by an outside person or agent.

13. Mechanisms Used--This category answered the question "By what means does the teacher attempt to implement her goal?" and included three sub-categories or combinations of these: (a) verbal (words only), (b) physical (touch, pat, hug, etc.), and (c) gesture.

14. Level of Participation--This category attempted to measure the amount of involvement of the teacher in the episode and was rated on a five point continuum from low to high.

15. Level of Affect--The feeling tone which the teacher seemed to invest in the episode was the object of this judgment and was rated on a seven point continuum from very positive to very negative.

16. Relevance--This category was judged for all enclosed episodes and was a judgment as to whether this enclosed episode was relevant or not to the major ongoing enclosing episode with which it was proceeding simultaneously.

In order to maximize the comparability of data, several selection criteria were imposed upon the records: (a) the observations must have been taken during comparable behavior settings, (b) the teacher must have been in full charge of the situation (She could have had aides or others in helping roles, however. See Barker and Wright's Penetration Level 6), and (c) only those episodes which dealt with children were used. All these records which met the criteria were then included in the present analysis. The data were then converted to percentages to correct for the varying lengths of the individual records.

Perhaps it is appropriate at this point to discuss a criticism which has frequently been leveled at ecological specimen records--that of the subjectivity of the recording process itself. One specific example of this subjectivity is the adjective used to describe the words or action of the person being observed. Ecological specimen records contain phrases such as "She said warmly, 'Good morning, Mary'" or "He patted the boy's shoulder absentmindedly." Several points may be made in response to this criticism of subjectivity. (a) Ecological researchers have argued that good reliability can be demonstrated between independent observers on these subjective aspects of a specimen record. (b) These subjective descriptors do not affect the marking of an episode, which was used as the basic unit of analysis in the present study. They do not affect its presence or non-presence or its beginning or end point. (c) They do not affect any judgments made on the episodes for any of the 16 categories judged except for level of affect.

Results and Discussion

Because of the nature of the data which finally resulted after all comparability criteria had been imposed, none of the usual or standard statistical techniques were appropriate. In this sense the current study can only be considered exploratory. A careful scrutiny of the data, however, did yield several very interesting differences between effective and ineffective teachers which were of such a nature as to warrant discussion and limited dissemination for their heuristic value if for no other. Only those differences which, had statistical techniques been applicable, would have been obviously significant at a high level are reported here, such as the difference between 5% and 95%.

The data were first analyzed separately in individual behavior settings. They were then collapsed across settings to determine whether any differences appeared irrespective of setting and some did occur. Because of their seemingly greater generality these differences are reported first. The behavior of effective teachers could be differentiated from that of ineffective ones in all settings by at least three factors:

1. Effective teachers had fewer episodes which, reciprocally, lasted a longer period of time. This might appear somewhat at variance with the typical sterotype of a good teacher who always seems to be doing a great many things. What it may suggest, however, is that all of the things which she is doing hang together in such a way that they become one organized whole piece of behavior. An effective teacher is able to sustain her behavior longer in a more continuous flow without interruption or change in direction.

2. Effective teachers showed more episodes ending in attainment of their goals than did ineffective ones. While an obvious goal was easily recognized in most episodes of all teachers, an effective one more frequently achieved the desired end. This may imply that effective teachers' goals and objectives are more clearly understood or delineated.

3. Effective teachers showed more positive and less negative emotional feeling tone in their contacts with the children than did ineffective ones. Their behavior more often communicated warm, accepting, friendly, helpful, cheery, pleasant feelings to the child than it did dour, stern, frowning, impatient, rejecting, angry ones. This is the one category which was judged on the basis of the adjectival descriptors in the records.

Several differences appeared in teachers' behavior as a function of one particular setting. It is interesting to note that many more differences appeared during Behavior Setting: Morning Greeting than during Behavior Setting: Large Group Activity, thus perhaps lending additional support to many educators' beliefs that the first period of the day is a crucial one in terms of teacher behavior.

Structurally, during Morning Greeting, an effective teacher showed more episodes lasting one minute or more and had more enclosing episodes. This suggests, again, that effectiveness involves the ability to sustain a major ongoing behavior unit in a continuous, flowing stream while, at the same time, including other minor behaviors as part of the ongoing unit so that they all flow together as an organized whole.

Some differences also appeared between effective and ineffective teachers during Morning Greeting in their qualitative behaviors. Effective teachers showed a higher participation level than did ineffective ones. They were more involved in the situation. They seemed to invest more of themselves in their behavior. Effective teachers also showed a higher level of spontaneity during Morning Greeting. They were more in control of the situation as evidenced by the fact that they initiated and/or terminated more of their own behavior episodes than were initiated or terminated by an outside agent. Examination of the records showed that effective teachers were very aware of their environment and events occurring within it and took account of these in their own behaviors; but these behaviors were not directed by that environment. Effective teachers used more mechanisms to implement their behavior episodes. Of the three mechanisms judged, verbal, physical, and gesture, ineffective

teachers frequently restricted their contacts with the children to verbal ones while an effective teacher almost always used two mechanisms and often all three in one episode. An effective teacher apparently supplied the child with more cues and provided a richer stimulus input than did an ineffective one.

Only one difference appeared as a function of Behavior Setting: Large Group Activity but it was one which may have considerable import for teaching. During Large Group Activity an effective teacher had more episodes concerned with the group as a whole whereas an ineffective teacher tended to have more episodes concerned with individuals or small groups. This difference between teachers of varying levels of effectiveness might initially seem somewhat contradictory with respect to the traditional idea that a good teacher gives a great deal of individual attention to children. When one considers that the analysis was done in terms of episodes, however, this difference becomes less of an enigma.

In contrast with an episode, which is defined as the major, ongoing, molar unit of behavior, another unit may be identified called a phase which is defined as a smaller, more molecular unit which is an individual and separate act in itself but which combines with other phases to form episodes. They are the "muscle", if you will, behind the episodes. An example of a phase might be "He walked slowly across the room." This phase might be a part of an episode entitled "watching goldfish".

From an inspection of the phases of the records it was apparent that the traditional idea of better teaching being associated with more individual attention to children might very well have been applied to an analysis using these smaller, molecular, units. In terms of the major

ongoing units of behavior or episodes, however, it appeared quite clear that effective teachers kept their group with them, before them and behaviorally related to them significantly more often than did ineffective ones.

These, then, were the major differences between the behavior of effective and ineffective teachers during the two settings studied both individually and collectively. There were also some interesting similarities, however, and some data which seem to have generality for teaching behavior itself irrespective of varying levels of effectiveness. The behavior of each teacher differed greatly as he or she moved from Behavior Setting: Morning Greeting to Behavior Setting: Large Group Activity. The behavior of any one teacher in a given setting seemed much more different from that same teacher's behavior in another setting than it did from another teacher's behavior during the same setting. This further confirms Barker and Wright's notion of the coercive nature of behavior settings in and of themselves. Their data as well as those of the Schoggens show that this is consistently true for children. It seems true for adults as well.

A second finding which gives support to this conclusion is that there were many fewer differences between teachers in Large Group Activity than in Morning Greeting. The fact that this more structured, relatively more formal setting tended to level out individual differences points again to the power of the setting itself to control human behavior.

A third finding of interest concerned the number of behavior episodes which an individual can maintain simultaneously. Barker and Wright had found that their children never had over four episodes in progress at any

one time and that usually only three were proceeding simultaneously. This also appears true of adults. Although there was some question as to whether teachers had some things in mind rather continuously, it was judged that they were never able to maintain in action more than four at any one time and most often not more than three. Teachers may, indeed, have more behavioral objectives, goals, and patterns more readily available to be called up at a moment's notice when the situation becomes appropriate than do children, but when they bring one of these into play, some other ongoing unit either ends or is interrupted.

Conclusions

In summary, the findings from the present study indicate that effective and ineffective teachers do show objective, quantifiable behavioral differences both in terms of the structure and the quality of their behavior. An effective teacher's behavior appears to be organized into longer, more continuous, more smoothly flowing wholes than does that of an ineffective teacher. This finding was a consistent one and was repeated many times throughout the data. It is not suprising, therefore, that effective teachers attained more of their behavioral goals. The obtained qualitative differences in terms of the greater amount of positive emotional feeling tone expressed by effective teachers are perhaps predictable based on the principles of learning and reinforcement theory. The larger number and the direction of the differences which appeared between teachers as a function of varying levels of effectiveness during Behavior Setting: Morning Greeting is thought to be a very interesting finding and one which supports the general opinion among educators that this beginning period of the day is crucial in setting the patterns for

the rest of the day and that effective teachers recognize and take advantage of this fact.

It was concluded that: (a) differences in the behavior of teachers did appear as a function of their effectiveness as judged by supervisors and that (b) an ecological specimen record approach was a very rich technique for getting at some of these differences with high potential for further research.

Further research in the area is needed in order to verify the present findings and to elaborate them. Study needs to be undertaken in regard to application of statistical techniques to these kinds of data. Some of the current findings, especially those regarding structure of teacher behavior, are highly provocative. More work needs to be done, however, in order to specify their nature and to check their generality. The relationship between teacher behavior variables and extraneous variables such as pupil achievement also needs to be studied. Certainly, the records of the observations taken in the current study are available for further analyses and/or inclusion as part of a larger sample of ecological specimen records on teacher behavior. The possibilities are endless and the scope of the study of teacher effectiveness through use of the ecological methodology is limited only by the imagination of the investigator.

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Appendix

Ecological Studies

Samples From Teacher Specimen Records

The following are excerpts from 30 minute specimen records of teacher behavior. They are of the first minute in the teacher's day. Both of the teachers were functioning as head teachers in the classrooms of intervention projects for five-year-old culturally disadvantaged children. Each teacher had other aides working with them in the classroom. The children had been in school for approximately six months at the time of the observation. The records have been unitized into episodes, which were the ecological units used for the present study.

	Mr. Brown	Mrs. Hart.
Greeting Children	0'00" Mr. Brown enters the room slowly. He has a box in his hand which says "Singer Company" on it. He brings in the box and places it on a small table in the center of the north wall of the room.	0'00" Mrs. Hart goes to the door leading to the outside and opens it. (This apparently constitutes a signal as children being disembarking from the school bus and coming into the school.)

Taking Roll	He goes to his desk. He looks at the desk as if looking for something but not really expecting to find it. He picks up a pencil.
Answering Child	A child comes up and asks Mr. Brown a question. He says, "Hmm?" in an absent-minded manner not looking at the child. I am not able to tell whether or not he responds further to the child. He picks up his register. He walks across the floor to the center of the room.
Greeting Children	She says brightly, to the first youngster as he enters the room, "Hi there, Calvin," smiling as she does so. Calvin smiles at her and says quietly, "Hi." He enters the room. She says, with interest to the second child as he enters, "Wyatt, how are you this morning? What a nice red hat." Wyatt smiles and goes on into the room. Another child enters. Mrs. Hart says cheerily, "Good morning, Greg."

Greeting Children

A little girl is coming slowly toward the door. Mrs. Hart says in a quiet but friendly manner, "Good morning, Polly."
Polly apparently mutters something under her breath, as her lips move, but I cannot hear what she says.
Mrs. Hart smiles at Polly but does not press further conversation.
Polly enters the classroom.
A small Negro boy enters the school.

Taking Roll

Telling children to put coats

He says, "All right, everyone put your coats here on the desk," in a bland expressionless command. He indicates the childrens' desks in the center of the room.
Then he says, "All right, you too," to a child.
He gestures indicating that the child should put his coat on the desk.

Patting Child

He pats two children on the head absently as they walk past him.

Greeting Children

Mrs. Hart says enthusiastically, "Paul, what a lovely smile you brought today."
A little girl enters the room.
Mrs. Hart looks at her and says, "So did Gwen."
A little boy enters.
Mrs. Hart asks in a friendly greeting, "George, how are you today?"
A child enters with a doll.
Mrs. Hart says to the child with interest and enthusiasm, "What a nice baby doll she brought today. Hi there, Yvonne."
Another child enters.
Mrs. Hart says in a friendly manner, "Good morning, Emil."

Helping Child

A girl asks for some help in unbuttoning her coat.
Mr. Brown walks across the room to the desk where the child is standing.
He puts the register down on the desk.
He bends over toward the child.
He unbuttons her coat.
He straightens up again.
The child takes off the coat by herself and she starts toward the coat stack on the cots.

Taking Roll

Mr. Brown picks up his register again.
He stands watching the door without expression as other children and the aide enter.

Taking Roll

Helping Child

Mr. Brown walks across the room and around the desk. He bends to help a second child take off his coat.

(I do not know who made the first move here.)

Mr. Brown takes the coat from the child.

He walks purposefully across the room putting it on the stack of coats on the cots.

He turns around facing the children in the room.

He says, "Okay, let's have a seat," in a flat, tone-less voice.

The children begin to sit down.

Patting Child

He pats a child on the head again absently as the child walks past him.

He walks slowly to the center to the room still holding his register.

Greeting Children

She adds in a teasing voice, "Hey, where's that smile?"

Emil smiles tardily and as if with some effort.

Mrs. Hart says with approval, "There it is," as she smiles back at the boy.

Another child enters and Mrs. Hart says gently, "Good morning, Joseph. We're going to have a nice day today, aren't we?"

Joseph looks at Mrs. Hart as he continues on into the classroom, but I do not see that he responds verbally.

A little girl enters the room.

Mrs. Hart says in a friend-ly manner, "Faye, how are you?"

Taking Roll

He stands there briefly
for a minute and then
moves toward the door.
He turns on the light.
He opens the door and
goes outside the room.
He looks behind the door.
I cannot see what he is
doing.
After a very short period
of time he comes back
into the room.
He closes the door.
He walks slowly toward
the center of the room.
He holds his register up
at a comfortable reading
level.
He calls several names.
He glances around the group
briefly.
1'00" He says, "Sit down,
Gerry, we can get the roll."
He continues calling the roll.

Greeting Children

She says in mock ferocity,
"Hey, I didn't see.....,"
pausing to look at the child
with widened eyes.
The child smiles at her.
"There's that smile," she
says approvingly.
Mrs. Hart returns the smile.
Another boy enters.
Mrs. Hart says brightly,
"How are you, Willie?"
Another boy enters and Mrs.
Hart says with interest,
"....., how are you today?"
Another little boy comes
slowly toward the door.
Mrs. Hart smiles as if
amused and says, "Who's this?"
The boy quickens his step and
smiles hesitantly at Mrs. Hart.
Mrs. Hart says warmly, "Hi,
Wade."
Another child enters and Mrs.
Hart says in a friendly manner,
"Good morning, ..."

Greeting Children

Responding to Driver

The driver calls to Mrs. Hart that some child is ill today.

Mrs. Hart says with interest, "Oh, she is? Thanks so much."

1'00" She turns around, coming into the room, closing the door after her.